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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,259	08/31/2006	Nicholas James Adams	TS5590US	9318
23632	7590	11/24/2009		
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EXAMINER				
SINGH, PREM C				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/591,259

**Applicant(s)**

ADAMS ET AL.

**Examiner**

PREM C. SINGH

**Art Unit**

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 7, 8 and 12-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 8 and 12-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Paper No(s)/Mail Date \_\_\_\_\_
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

1. Amendment to claims 1, 7 and 17 and cancellation of claim 6 is noted.
2. New rejection follows.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-4, 7, 8 and 12-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Beijnum et al (WO 02/50213: US equivalent-US Patent 7,347,928) (All further references will correspond to the US Patent) ("Beijnum") in view of Van Ballegoy et al (US Patent 6,576,120) ("Ballegoy").

5. With respect to claims 1 and 12, Beijnum discloses a process for making multiple grades of base oil products (See column 1, lines 7-10). The process comprises following steps:

(a) hydrocracking a mineral crude derived feed, comprising a vacuum gas oil having more than 10 wt% compounds present therein boiling above 470°C (See column 4, lines 6-14), utilizing a hydrocracking catalyst comprising an acidic large pore size zeolite within a porous support material, with an added metal having hydrogenation/dehydrogenation function, wherein said added metal is a Group VIII/Group VIB combination (See column 3, lines 49-54) to thereby provide a conversion level of above 50 wt% and obtaining an effluent (See column 2, lines 32-38, 55-64);

(b) distilling the effluent as obtained in step (a) into at least one middle distillates product and a full range residue boiling predominantly above 370°C (See column 4, lines 17-20);

(c) catalytically dewaxing the full range residue (See figure 1, 2; column 7, lines 14-52) with a dewaxing catalyst comprising a dealuminated extrudate of a zeolite, like: ZSM-5, ZSM-12, ZSM-22, ZSM-23, ZSM-32, ZSM-35, ZSM-48 and a low acidity refractory binder material (See column 4, lines 57-67; column 5, lines 1-13, 31-40) and Group VIII metal of either platinum or palladium that is present in the said dewaxing catalyst (See column 5, lines 6-13), thereby obtaining a dewaxed oil (See figure 1, 2; column 7, lines 14-35);

(d) hydrofinishing the gas oil fraction obtained in step (c) to provide a mixture of gaseous components and heavy base oil (See column 9, lines 36-48).

(e) distilling the dewaxed and hydrofinished oil and separating the lighter fraction at a cutting temperature of 445°C (See column 9, lines 25-48).

It is to be noted that Beijnum takes the dewaxed stream to the hydrofinishing step and separates the lighter fraction (less than 445°C cut point) after hydrofinishing.

It would have been obvious to one skilled in the art at the time of invention to modify Beijnum invention and separate the lighter fraction of the dewaxed stream before hydrofinishing and thus reduce the catalyst requirement in the hydrofinisher and make the process more economical.

Beijnum does not appear to specifically disclose use of MTW zeolite, however, the invention does disclose use of several intermediate pore zeolites, for example ZSM-

5, ZSM-12, ZSM-22, ZSM-23, ZSM-32, ZSM-35 and ZSM-48 (See column 4, lines 57-67; column 5, lines 1-13).

Ballegoy discloses a catalytic dewaxing process using feed, catalyst and operating conditions similar to Beijnum (See abstract; column 1, line 60 – column 4, line 39). Ballegoy also discloses that ZSM-12 has MTW-type topology (See column 4, lines 30-31).

Thus, Ballegoy is evidence that Beijnum is using a dealuminated extrudate of a zeolite (ZSM-12) of the MTW type, as claimed.

Beijnum invention does not appear to specifically disclose the weight ratio of zeolite to the binder material, however, Ballegoy discloses weight ratio of zeolite to binder between 5:95 and 35:65 (See abstract). Thus, it is expected that in Beijnum invention also, the weight ratio of zeolite to the binder material should be in a similar range.

Beijnum invention does not appear to specifically disclose the weight percentage of platinum or palladium metals in the dewaxing catalyst, however, Ballegoy discloses using 0.1 to 5 wt% palladium and/or platinum (See column 3, lines 66-67; column 4, lines 1-8). Thus, it is expected that in Beijnum invention also, the weight percentage of platinum or palladium metals should be in a similar range.

6. With respect to claim 2, Beijnum discloses that more than 20 wt% of the compounds present in the vacuum gas oil boil above 470°C (See column 4, lines 11-14).

7. With respect to claims 3 and 4, Beijnum discloses, "The rest fractions obtained in the vacuum distillation can optionally be recycled to the hydrocracker" (Column 4, lines 39-41).
8. With respect to claim 7, Beijnum discloses that the hydrogen partial pressure in step (c) is 10-200 bar (See column 5, lines 49-50).
9. With respect to claim 8, Beijnum discloses that the heavy base oil obtained in step (e) comprises 98.6 wt% saturates and has a viscosity index of 107 (See column 9, Table 3).
10. With respect to claims 13 and 16, Beijnum discloses that the low acidity refractory binder material is selected from silica, zirconia, titanium dioxide, germanium dioxide, boria and mixtures of two or more thereof (See column 5, lines 14-31). Beijnum also discloses that silica is essentially free of alumina (See column 5, lines 32-34).
11. With respect to claims 14 and 15, Beijnum invention does not appear to specifically disclose the average crystal size and alpha value of the dewaxing catalyst. Since Beijnum is using similar zeolites as claimed by the Applicant, it is expected that the average crystal size and the alpha value in Beijnum invention should also be in the claimed range.

12. Claim 17 has all the limitations of claim 1 with the only difference being the absence of step (d) of separation of gas oil fraction from the fraction boiling below gas oil fraction.

With respect to claim 17, as discussed under claim 1, Beijnum invention discloses the claimed steps of hydrocracking (See column 2, lines 32-38, 55-64; column 3, lines 49-54; column 4, lines 6-14), distilling the hydrocracker effluent (See column 4, lines 17-20), catalytic dewaxing (See figure 1, 2; column 4, lines 57-67; column 5, lines 1-13, 31-40; column 7, lines 14-52) and hydrofinishing (See column 9, lines 36-48) to provide a base oil product.

13. With respect to claim 18, Beijnum invention does not appear to specifically disclose the weight ratio of zeolite to the binder material, however, Ballegoy discloses weight ratio of zeolite to binder between 5:95 and 35:65 (See abstract). Thus, it is expected that in Beijnum invention also, the weight ratio of zeolite to the binder material should be in a similar range.

14. With respect to claims 19 and 22, Beijnum discloses that the low acidity refractory binder material is selected from silica, zirconia, titanium dioxide, germanium dioxide, boria and mixtures of two or more thereof (See column 5, lines 14-31). Beijnum also discloses that silica is essentially free of alumina (See column 5, lines 32-34).



15. With respect to claims 20 and 21, Beijnum invention does not appear to specifically disclose the average crystal size and alpha value of the dewaxing catalyst. Since Beijnum is using similar zeolites as claimed by the Applicant, it is expected that the average crystal size and the alpha value in Beijnum invention should necessarily be in the claimed range.

16. With respect to claim 23, Beijnum discloses, "The rest fractions obtained in the vacuum distillation can optionally be recycled to the hydrocracker" (Column 4, lines 39-41).

17. Claims 5 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Beijnum et al (WO 02/50213: US equivalent-US Patent 7,347,928) (All further references will correspond to the US Patent) ("Beijnum") in view of Van Ballegoy et al (US Patent 6,576,120) ("Ballegoy") and further in view of Moore et al (US Patent 6,583,186) ("Moore").

18. With respect to claims 5 and 24, Beijnum does not appear to specifically disclose adding a Fischer-Tropsch (FT) derived isomerized paraffin fraction in the full range residue.

Moore discloses a process for making base oil products using a Fischer-Tropsch (FT) derived feed using operating conditions and catalyst similar to Beijnum (See abstract; column 1, lines 45-64; column 8, lines 14-65; column 9, lines 23-54). Moore

also discloses that the feed can be blended with high boiling point petroleum origin feed (See column 5, lines 66-67; column 6, lines 1-6). Moore further discloses that the heavy fraction contains more than 80 wt% paraffins (See column 3, lines 22-29) and can be subjected to isomerization and dewaxing (See column 11, lines 58-63).

Thus, it would have been obvious to one skilled in the art at the time of invention to modify Beijnum invention and blend a FT derived paraffinic, isomerized feed to the full range residue as disclosed by Moore to enhance the production of base oil products and make the process more flexible by using feed stocks from multiple sources.

### ***Response to Arguments***

19. Applicant's arguments with respect to claims 1-5, 7, 8, and 12-24 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PREM C. SINGH whose telephone number is (571)272-6381. The examiner can normally be reached on 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PREM C SINGH/  
Examiner, Art Unit 1797